DOUGLAS COUNTY Health Department

Promoting and Protecting Public Health

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November 15, 2005

To: Healthcare Providers in Douglas County

From: Adi M. Pour, Ph.D., Health Director

Re: Norovirus

As you are aware, several confirmed and suspected outbreaks of norovirus have recently occurred in our community. The Douglas County Health Department (DCHD) has received reports that a number of potentially infected individuals have presented to local physician offices and hospital emergency rooms.

Although noroviruses are transmitted primarily through the fecal-oral route, either by direct person-to-person spread or by fecally contaminated food or water, noroviruses can also spread via a droplet route from vomitus. Vomit from an infected individual can contain millions of viral particles, with as few as 100 virus particles sufficient to cause infection. According to the Centers for Disease Control and Prevention (CDC), evidence exists for transmission due to aerosolization of vomitus that presumably results in droplets contaminating surfaces or entering the oral mucosa and being swallowed. In healthcare facilities, transmission can additionally occur through hand transfer of the virus to the oral mucosa via contact with materials, fomites, and environmental surfaces that have been contaminated with either feces or vomitus. No evidence suggests that infection occurs through the respiratory system.

Appropriate environmental disinfection following a vomiting incident will be important to limit further transmission of the virus. Attached you will find DCHD interim recommendations for clean-up following a vomiting incident and a list of disinfectants that have shown effectiveness against calciviruses (as a surrogate for norovirus).

In consultation with the Douglas County Health Department Medical Advisor, Jose R. Romero, M.D., DCHD is also recommending that hospital facilities seriously consider contact droplet precautions for healthcare workers who are providing direct patient care to individuals suspected of being infected with norovirus who are experiencing vomiting. Once the vomiting has ceased, a return to contact precautions can occur.

Additional Information about norovirus can be found at:
http://www.douglascountyhealth.com

Please share this information with appropriate individuals in your facilities, including your facility's environmental staff.

Thank you for your contribution to ensuring the health of our community.

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Interim Recommendations for Responding to a Public Vomiting Incident

General Recommendations:

- Always use wet, versus dry cleaning methods to minimize the airborne spread of contaminated particles. Evidence suggests that dry vacuum cleaners (including HEPA Filter units) and wet/dry vacuums may lead to further surface contamination via the spread of airborne particles.
- Use single use cleaning equipment and supplies whenever possible and dispose of properly.
- Clean and disinfect any equipment that is not discarded.
- Following a vomiting incident in kitchens, buffet and drink service areas, discard all exposed/unwrapped ready-to-eat foods within a 25-foot radius of the incident location.
- If the vomiting incident occurs on a bus or van, consider removing it from service until it can be appropriately cleaned and sanitized

Suggested disposable Personal Protective Equipment (PPE):

- Tyvek overalls
- Boot covers
- Gloves
- Mask
- Eye protection

1. Ensure area is isolated or cordoned off as soon as possible after the incident is discovered. Environmental studies indicate that viral particles can be disseminated as far as 25 feet from the site of the vomiting incident.
2. Put on Personal Protective Equipment.
3. Cover vomit with absorbent towels.
4. Spray area with chemical known to be effective against norovirus (use caution with bleach; chlorine will bleach-out many soft furnishings, carpet, etc) and leave residuals for at least 10 minutes to ensure adequate contact time with the chemicals.
5. Remove the towels and residuals using a dustpan and spatula.
6. Dispose of all materials including dustpan, spatula and PPE in biohazard bag.
7. Spray the area with chemical and let sit for at least 10 minutes.
8. Let the area air-dry.
9. Steam clean (high temperature extraction unit) contaminated carpets immediately following the manual cleaning steps outlined above.
10. Clean and sanitize any cleanup equipment that is not disposed of.

11-14-2005

Some Disinfectants Effective Against Feline Calicivirus (as a surrogate for Norovirus)

Product Name	Manufacturer	Main Active Ingredient(s)	Application(s)	Contact Time (minutes)	Log_{10} Reduction	Safety Profile (as used)	Cost/Liter (as used)
Accelerated Hydrogen Peroxide™	Virox Technologies	0.5% hydrogen peroxide (RTU)	RTU liquid, wipes, concentrate (mix 1:16)	2	> 4.7	Non-toxic	$0.12
Big Spray®	Antiseptica	25.92% ethanol, 11.5% 2-propanol, 0.054% polyhexanide	RTU liquid	1	> 4.7	Eye, lung, skin irritation; flammable	$9.00
Bleach	(generic)	0.1% (1000 ppm) Sodium hypochlorite	Powder, liquid	1	> 4.7	Eye, lung, mucous membrane and skin irritation	$0.01
Coverage 256®	ConvaTec	4 QUATS, 2470 ppm @ 1:62	Concentrate, mix 1:62	10	4.0	Eye, lung, mucous membrane and skin irritation	$0.08
EcoTru®	EnviroSystems	0.2% parachlorometaxylenol	RTU liquid, wipes	30	4.12	Non-toxic	$2.75
Ethanol	(generic)	75% ethanol	RTU @ 75%	10	4.7	Eye, lung, skin irritation; flammable	$1.50
Lysol® Disinfectant (Aerosol) Spray	Rickitt Benckiser	79% ethanol, 0.1% QUAT	RTU spray	3	3.4	Eye, lung, skin irritation; flammable	$16.00
Mikro-Bac® II	Ecolab	4.75% o-phenylphenol, 4.75% o-benzyl-p-chlorophenol	Concentrate, mix 1:128	10	6.2	Toxicity to brain (ethylene glycol), kidneys, liver, lungs, skin; carcinogen (OPP); teratogen (ethylene glycol)	$0.04
Virkon®	Antec International	21.45% Peroxomonosulphate	Powder, mix as a 1% or 2% solution	10	> 4.0 @ 1% solution	Non-toxic	$0.35
Cryocide 20™ (efficacy testing is pending)	R.P. Adam	0.75% Stabilized chlorine dioxide + twin chain QUAT	RTU liquid	N/A	N/A	Eye, lung (ClO_2 gas), skin irritation	$22.50

From Sattar and Wheeler, Seatrade Cruise Shipping Convention, Miami, March 4, 2003.

Comments:

A Log_{10} reduction of 4 (99.99%) or greater is considered adequate for FCV/Norovirus disinfection. Products listed as non-toxic may still cause mild eye and/or skin irritation in some people. Some compounds may leave a surfactant residue on various surfaces. When selecting a disinfectant, it's important to consider the product's entire formulation since there may be significant disinfectant action synergism produced by the specific combination of ingredients. It is recommended that you test any specific disinfectant for adverse effects on your own ships' environmental surfaces prior to it's general use.